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KAZUO SAITO ET AL

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DECLARATION UNDER 37 C.F.R. 1.55 (a)

Honorable, Commissioner of Patents and Trademarks
Washington, D.C., 20231

Sir,

I, Kenji Ohba, declare and say:

THAT I am a citizen of Japan residing at Tanashi,
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THAT I am a graduate of Shibaura Institute of
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THAT I am presently employed by NGB Corporation, 28th
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Japan and have been so employed since March, 1984;

THAT I understand the Japanese and English languages;
and

THAT the attached English document is a full true,
faithful and accurate translation of the specification as filed
of Japanese Patent Application No. Hei. 4-270567, filed on
October 8, 1992.

I declare further that all statements made herein of my
own knowledge are true and that all statements made on
information and belief are believed to be true; and further
that these statements and the like so made are punishable by
fine or imprisonment, or both, under Section 1001 of Title 18
of the United States Code and that such willful false
statements may jeopardize the validity of the application or
any patent issuing thereon.

Kenji Ohba

Date: February 26, 1996

PATENT OFFICE
Japanese Government

This is to certify that the annexed is a true copy of the following application as filed with this Office.

Date of Application: October 8, 1992

Application Number: Patent Application No. Hei. 4-270567

Applicant(s): SEIKO EPSON CORPORATION

September 10, 1993

Commissioner,
Patent Office: Wataru Asou

(Seal)

Issuance No. Hei- 5-3006676

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[Title of Invention] INK JET PRINTER

[Number of Claims] 6

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[TITLE OF THE INVENTION]

INK JET PRINTER

[CLAIMS]

[Claim 1]

An ink jet printer comprising:

a carriage which moves along a printing area;

an ink jet recording head mounted on the carriage defined above;

an ink cartridge mounted on the said carriage and supplying ink to the said ink jet recording head; and

a lever provided on the said carriage for mounting or demounting the said ink cartridge with respect to the said carriage,

wherein the ink jet printer is characterized by further comprising:

a stopper for stopping the movement of the said carriage by getting into contact with the said lever when an operation for mounting the said ink cartridge by means of the said lever has not been effected completely.

[Claim 2]

An ink jet printer according to Claim 1, wherein a carriage stop position is set for mounting or demounting the said ink cartridge with respect to the said carriage and the said stopper is disposed in the vicinity of the carriage stop

position defined above.

[Claim 3]

An ink jet printer according to Claim 1 or Claim 2 which is characterized in that the carriage stop position defined above is a capping position in which a cap is placed on the ink jet recording head defined above.

[Claim 4]

An ink jet printer according to Claim 1, Claim 2, or Claim 3 which is characterized in that the stopper defined above is formed in a structure integrated with a case for the printer.

[Claim 5]

An ink jet printer comprising:

a carriage which moves along a printing area;

an ink jet recording head mounted on the carriage defined above; and

an ink cartridge mounted on the said carriage and supplying ink to the ink jet recording head defined above;

wherein the ink jet printer is characterized in that the ink cartridge defined above is supported on the carriage defined above via a resilient member in the direction of movement of the said carriage.

[Claim 6]

An ink jet printer characterized in that the resilient member defined in Claim 5 is comprised of a lever defined in Claim 1.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Field of Industrial Utilization]

The present invention relates to an ink jet printer of the type constructed with an ink cartridge mounted on a carriage. More particularly, the present invention related to a structure for mounting an ink cartridge on a carriage in such a printer.

[0002]

[Prior Art]

Proposals have hitherto been made for an ink jet printer of the type having an ink cartridge mounted on a carriage.

[0003]

A printer of the type mentioned above can be constructed in a more compact form in comparison with a printer of the type which is not provided with any ink cartridge mounted on a carriage but feeds ink to an ink jet recording head mounted on a carriage through piping from an ink tank.

[0004]

In addition, as can be seen, for instance, in the Official Gazette on the Japanese Patent Application Laid Open No. 101949-1991 (Heisei 3), a proposal has been made for an ink jet printer in which the operation for the mounting or demounting of an ink cartridge with respect to the carriage can be effected in a simple manner by an operation of a lever.

[0005]

[Problems to be Overcome by Present Invention]

However, with the conventional printer in which the operation for the mounting or demounting of an ink cartridge with respect to the carriage can be effected by the operation of a lever, the arrangement provided is such that a carriage performs its reciprocating movement even in a case where the operation for mounting the ink cartridge has not been done completely.

[0006]

For this reason, in the event that a carriage performs its reciprocating movement in the state in which an ink cartridge is mounted incompletely, the ink jet printer has been liable to the threat that the ink cartridge may come off from the carriage, thereby possibly staining the recording paper or the path of the recording paper in the printer.

[0007]

In addition, a conventional ink jet printer does not have any shock-absorbing member that is interposed between the carriage and the ink cartridge in the direction of movement of the carriage, and, consequently, the force of inertia of the ink cartridge is transmitted directly to the carriage when the carriage makes a reversing motion, and the resulting shock causes large vibrations and a large reversing noise.

[0008]

Accordingly, a first object of the present invention is to prevent the ink cartridge from coming off in an ink jet

printer of the type in which the operation for the mounting or demounting of the ink cartridge is performed by an operation of a lever and thereby to overcome the problems described above.

[0009]

Also, a second object of the present invention is to reduce the vibrations and the reversing noise.

[0010]

[Means of Overcoming the Problems]

In order to attain the first object described above, the ink jet printer according to Claim 1 of the present invention is an ink jet printer comprising: a carriage which moves along a printing area; an ink jet recording head mounted on the above-mentioned carriage; an ink cartridge mounted on the carriage for supplying ink to the above-mentioned ink jet recording head; and a lever provided on the above-mentioned carriage for mounting or demounting the above-mentioned ink cartridge with respect to the carriage, wherein the ink jet printer is characterized by being further provided with a stopper for stopping the movement of the above-mentioned carriage by getting into its contact with the above-mentioned lever when an operation for mounting the ink cartridge by means of the lever has not been effected completely.

[0011]

The ink jet printer according to Claim 2 of the present invention is an ink jet printer as defined in Claim 1 which is

characterized by being further having a carriage stop position set up for mounting and demounting an ink cartridge in respect of the carriage and having the above-mentioned stopper in the proximity of the carriage stop position mentioned above.

[0012]

The ink jet printer according to Claim 3 of the present invention is an ink jet printer as defined in Claim 1 or Claim 2 which is characterized by having the carriage stop position set up in the capping position in which a cap is placed on the ink jet recording head.

[0013]

The ink jet printer according to Claim 4 of the present invention is an ink jet printer as defined in Claim 1, Claim 2, or Claim 3 which is characterized in having a stopper formed in a structure integrated with the case for the printer.

[0014]

In order to attain the second object described above, the ink jet printer according to Claim 5 is an ink jet printer provided with: a carriage which moves along a printing area; an ink jet recording head mounted on the above-mentioned carriage; and an ink cartridge mounted on the above-mentioned carriage and supplying ink to the above-mentioned ink jet recording head; wherein the ink jet printer is characterized by having the above-mentioned ink cartridge supported on the above-mentioned carriage by means of a resilient member in the

direction of movement of the carriage.

[0015]

The ink jet printer according to Claim 6 of the present invention is an ink jet printer as defined in Claim 5 which is characterized in having the elastic member formed of the lever as defined in Claim 1.

[0016]

[Working]

The ink jet printer according to Claim 1 of the present invention stops the carriage from its movement with the lever put into its direct contact with the stopper in the event that the operation for mounting the ink cartridge by means of the lever has not been performed completely.

[0017]

Therefore, the ink jet printer can prevent the ink cartridge from coming off from the carriage in case the ink cartridge is mounted incompletely.

[0018]

The ink jet printer according to Claim 2 of the present invention can stop the carriage from its movement with the lever immediately getting into its direct contact with the stopper in the event that the carriage has started moving in any state in which the operation for mounting the ink cartridge by means of the lever has not been done completely because the ink jet printer is an ink jet printer as defined in Claim 1 which further has a carriage stop position set up

for mounting or demounting an ink cartridge on the carriage and has the above-mentioned stopper provided in the proximity of the above-mentioned carriage stop position.

[0019]

Therefore, the ink jet printer is capable of promptly preventing any incompletely mounted ink cartridge from coming off from the carriage.

[0020]

The ink jet printer according to Claim 3 of the present invention is an ink jet printer as defined in Claim 1, Claim 2, or Claim 3 in which a carriage stop position is set up in the capping position where a cap is placed on the ink jet recording head, so that this ink jet printer is capable of preventing the inside region of the printer from being stained because the cap collects the leaking ink even in a case where ink is discharged from the ink jet recording head by the effect of a rise occurring in the pressure in the inside of the ink flow channel on the occasion when the ink cartridge is mounted on the carriage.

[0021]

The ink jet printer according to Claim 4 of the present invention is an ink jet printer as defined in Claim 1, Claim 2, or Claim 3 in which a stopper is formed in a structure integrated with the case for the printer, so that the printer can obtain a stopper in a simple construction.

[0022]

The ink jet printer according to Claim 5 of the present invention has a structure in which an ink cartridge is supported on the carriage via an elastic member in the direction of movement of the carriage, so that the force of inertia generated by the ink cartridge when the carriage is operated for its return in its movement is transmitted to the carriage through the medium of the elastic member. For this reason, the force of inertia of the ink cartridge is transmitted in a moderated state to the carriage, and, as the result, the vibrations and reversing noise caused by the movement of the ink cartridge on the carriage can be reduced.

[0023]

The ink jet printer according to Claim 6 of the present invention is an ink jet printer as defined in Claim 5 in which the elastic member is comprised of a lever as defined in Claim 1, so that the present invention offers an ink jet printer which is capable of preventing the ink cartridge from coming off and is at the same time capable of reducing the vibrations and the reversing noise to a low level.

[0024]

[Examples of Preferred Embodiments]

Now, with reference to the accompanying drawings, a description will be made of an example of preferred embodiment of the present invention.

[0025]

Fig. 1 is a left-side cross-sectional view illustrating

an example of preferred embodiment of an ink jet printer in accordance with the present invention.

[0026]

First, a description will be made of an outline of this ink jet printer.

[0027]

In Fig. 1, the reference number 10 denotes an automatic paper feeder. The reference number 20 denotes an automatic paper feeding path. The reference number 30 denotes a paper feed roller. The reference number 21 denotes a gate roller, which is driven in its pressure contact with the paper feed roller 30. The reference number 22 denotes a pinch roller, which is driven in its pressure contact with the paper feed roller 30. The reference mark A denotes a printing area. The reference number 60 denotes a carriage on which an ink cartridge 90 is mounted. The reference mark B denotes a paper discharge path. The reference number 23 denotes a paper transport section disposed in the paper discharging path B. The reference number 24 denotes a paper discharge section for discharging the recording paper while holding the paper in a concave shape. The reference number 25 denotes a discharged paper tray.

[0028]

The automatic paper feeder 10 has a paper stacker formed for recording paper P directly on the bottom part 11a of the lower case 11 of the printer.

[0029]

The sheets of recording paper P are fed one by one into the automatic paper feeding path 20 by the operation of a paper feed-in roller 12, which is provided in a single unit in the central portion.

[0030]

The recording paper which has been fed in has its leading edge put between the paper feed roller 30 and the gate roller 21 when the paper feed-in roller 12 is in rotation, so that the recording paper is set into its rotation motion centering around the paper feed-in roller part 12, being thereby subjected to a deskewing operation, being thereafter wound around the paper feed rollers 30 rotating in the paper feeding direction, and then reaching the printing area A via the pinch roller 22.

[0031]

The printing area A is formed between an ink jet recording head 70 installed on a carriage 60 to work in its reciprocating movement in a direction crossing at right angles with the surface of the recording paper, as shown in Fig. 1, and the upper surface of an intermediate frame 110. The reference number 61 denotes a guide shaft, which guides one end of the carriage 60, and the reference number 120 denotes an upper frame, which guides the other end of the carriage 60.

[0032]

The recording paper P1 which is printed in the printing

area A is discharged into the discharged paper tray 25 via the paper transport section 23 and the paper discharge section 24.
[0033]

Next, a description will be given of the structure of mounting the ink cartridge 90 (hereinafter simply referred to also as "the cartridge") on the carriage 60.

[0034]

Fig. 2 is a plane view illustrating the carriage 60 in its state as mounting the ink cartridge 90 thereon. Fig. 3 is a plane view illustrating the carriage 60 in its state not mounted with the ink cartridge. Fig. 4 is a cross-sectional view illustrating the carriage as taken along the line IV to IV in Fig. 3.

[0035]

As shown in these drawings, the carriage 60 is comprised of a carriage body 62 and a carriage cover 63.

[0036]

A head substrate 71, to which the head H is fixed in advance, is incorporated in the carriage body 62. A connecting part 75 for its connection with the ink cartridge 90 is formed into a structure integrated with the head substrate 71. The connecting part 75 is formed in a hollow cylindrical shape, and a needle 75a for breaking the seal of the ink cartridge is formed in a central portion thereof. An ink flow channel 75c, which communicates with an ink flow channel 70b in the head, is formed in a central area of the

needle 75a.

[0037]

The carriage cover 63 is provided with pins 63b and 63b, which respectively fit into round holes 62b and 62b provided in corners on a lower side of the carriage body 62, and claws 63a and 63a, which respectively engage with square holes 62a and 62a formed in the side walls of the carriage body 62. The carriage cover 63 is secured to the carriage body 62 with the pins 63b fitted in the round holes 62b and with the claws 63a engaged with the square holes 62a.

[0038]

The reference number 64 denotes a mounting part for mounting the ink cartridge 90, and this mounting part 64 is formed in a box shape in a structure integrated with the carriage cover 63. The reference number 65 denotes an elongated hole, which is made in the bottom area of the mounting part, and the connecting part 75 of the head substrate is fitted into this elongated hole 65. Slits 67 in relatively large widths are formed in the left and right side walls of the mounting part 64 so as to serve as paths for pins 94 of the ink cartridge, as it will be described later (see Fig. 2 and Fig. 5).

[0039]

As shown in Fig. 5, the ink cartridge 90 has a connecting part 91 formed in its bottom area for connection thereof with the head substrate 71. This connecting part 91

is connected to the connecting part 75 of the head substrate when the ink cartridge 90 is mounted on the mounting part 64. At the same time, a seal 92 of the connecting part 91 is formed so as to be broken by the needle 75a. When the seal 92 is broken, ink is supplied to a nozzle 70a of the head through the ink flow channel 75c, which is located in the central portion of the needle 75a, via the ink flow channel 70b of the head.

[0040]

As shown in Fig. 2 and Fig. 5, semispherical convex portions 93 and the pins 94 are respectively formed in a structure integrated with both the side surfaces of the ink cartridge 90.

[0041]

The reference number 80 denotes a lever, which is used to mount the ink cartridge 90 on the carriage 60 and to demount the same ink cartridge 90 from the carriage 60.

[0042]

As also shown in Fig. 6, the lever 80 is comprised of a tab 81 and a pair of arms 82 and 82, which are formed in an structure integrated with this tab 81. Shafts 83 are formed integrally with outer sides of the arms 82. These shafts 83 are rotatably supported with supporting parts 66 formed on the upper surface of the carriage cover 63, so that the lever 80 is supported in such a manner as to permit its rotation in the directions of the arrow marks a1 and a2 indicated in Fig. 5.

[0043]

The reference number 84 denotes a cam groove formed on the inner side of each arm 82. As shown in Fig. 7, the cam groove 84 includes an introducing groove 84a for introducing the above-mentioned pin 94 of the ink cartridge, a starting part 84b, which communicates with this introducing groove 84a, and a terminating part 84b, which communicates with the starting part 84b via a curved groove 84c. The curved groove 84c is formed in such a manner that the radius of curvature R with the shaft 83 as a center becomes gradually larger from the starting part 84b toward the terminating part 84d. It should be noted that, as it is apparent from Fig. 6, each of the parts 84b, 84c, and 84d, i.e. the above-mentioned parts other than the introducing groove 84a, are formed as a through hole penetrating from the inner surface to the outer surface of the arm.

[0044]

The reference number 85 denotes a tongue formed in a structure integrated with the arm 82 by means of a U-shaped slit 86, and this tongue 85 serves as a resilient member. An elongated hole 85a is formed at a distal end of this tongue 85.

[0045]

When the ink cartridge 90 is mounted, as shown in Fig. 2 and Fig. 5, the tongues 85 are deflected by the effect of their own resilience, and the semispherical convex portions 93

engage with the elongated holes 85a, respectively, thereby allowing the tongues 85 to hold the upper portion of the ink cartridge 90 resiliently in the direction of movement of the carriage (in the left-and-right direction as shown in Fig. 2).

[0046]

In Fig. 6, the reference number 87 denotes a stop pin, which is brought into its contact with the supporting part 66 of the carriage cover 63 and thereby restricts the more-than-necessary rotation of the lever 80 when the lever 80 is rotated in the direction indicated by the arrow mark a2.

[0047]

Referring mainly to Fig. 8, a description will be given of the mounting and demounting operations for the ink cartridge 90, using the lever 80 mentioned above.

[0048]

First, the lever 80 is rotated in the direction indicated by the arrow mark a2, and the empty ink cartridge is removed.

[0049]

Then, a new ink cartridge 90 is fitted lightly into the mounting part 64 (see Fig. 2 and Fig. 5) from a point above the mounting part 64 (this state is shown by a virtual line, and the corresponding reference numbers are indicated by adding "'" thereto). At this time, each pin 94' of the ink cartridge passes through the slit 67 in the mounting part 64, is then guided by an introducing groove 84a' of the cam groove in a lever 80', and reaches a starting part 84b' of the cam

groove.

[0050]

Therefore, if the lever 80' is rotated in the direction indicated by the arrow mark a1, each pin 94' relatively enters the curved groove 84c. The curved groove 84c is formed in such a manner that the radius of curvature with the shaft 83 taken as a center becomes gradually larger from the starting part 84b toward the terminating part 84d, as described above. Hence, the pin 94' is pushed downward in the slit 67 as the lever 80' rotates. That is, an ink cartridge 90' is gradually pushed downward. In addition, a connecting part 91' of the ink cartridge is gradually connected to the connecting part 75 of the head substrate, and a seal 92' is gradually broken at the same time.

[0051]

When the lever 80' is rotated fully in the direction indicated by the arrow mark a1 and reaches the position 80 indicated by the solid line in the manner described above, each pin 94 reaches the terminating part 84d of the cam groove, thereby allowing the ink cartridge to be mounted completely. At this time, since each convex portion 93 of the ink cartridge is fitted with a click in the elongated hole 85a in each tongue 85 of the lever, the user is able to confirm with ease that a complete fitting state has been obtained.

[0052]

It should be noted that when the ink of the ink cartridge

90 has entirely run out, the ink cartridge 90 can be easily removed simply by rotating the lever 80 in the direction indicated by the arrow mark a2 and lifting up the ink cartridge.

[0053]

The carriage stop position for performing the operations described above is indicated in Fig. 9.

[0054]

The carriage stop position serves as a capping position in which a cap 100 is fitted to the head H. The cap 100, which is fitted to the head H when the carriage is stopped, prevents the drying of the ink in the nozzle of the head, or cancels the clogging with the ink by sucking the ink from the nozzle when an ink clogging has occurred in the nozzle of the head. The reference number 101 denotes a lever for vertically moving the cap 100, and the reference number 102 denotes a pump unit for effecting a sucking operation.

[0055]

Fig. 10 is a cross-sectional view as taken along the line X - X shown in Fig. 9.

[0056]

In Fig. 9 and Fig. 10, the reference number 13 denotes an upper case of the printer, and an upper portion 13b (a portion corresponding to the above-mentioned carriage stop position) of its ceiling portion 13a is notched, and an opening is thereby provided, whereby it is made possible for the above-

mentioned lever 80 to perform its rotating operation.

[0057]

A forward end of the ceiling portion 13a is formed into a suspended portion 13c extending downward, and a right end face 13d thereof is formed into a stopper.

[0058]

That is, as shown in Fig. 10, the lever 80 is capable of passing below the ceiling portion 13a, so that the carriage 60 is capable of moving leftward as shown in Fig. 9 if the lever 80 is rotated fully in the direction indicated by the arrow mark a1, i.e., if the ink cartridge 90 is mounted completely on the mounting part 64. However, the lever 80 abuts against the stopper 13d, thereby stopping the movement of the carriage 60, as shown in Fig. 11, in the event that the rotation of the lever 80 in the direction indicated by the arrow mark a1 is incomplete and that the operation for mounting the ink cartridge 90 by means of the lever 80 has not been effected completely.

[0059]

With the above-mentioned structure, it is possible to obtain the following advantageous effects.

[0060]

(1) In the event that the operation for mounting the ink cartridge 90 by means of the lever 80 has not been effected completely, the lever 80 abuts against the stopper 13d and the movement of the carriage 60 is thereby stopped, so that the

incompletely mounted ink cartridge 90 is prevented from coming off the carriage 60. In this case, the movement of the carriage 60 is stopped not because the ink cartridge 90 abuts against the stopper 13d but because the lever 80 abuts against the stopper 13d. Hence, the ink cartridge 90 is reliably prevented from coming off, and the breakage of the ink cartridge is also prevented.

[0061]

(ii) Since the carriage stop position is provided for mounting or demounting the ink cartridge 90 with respect to the carriage 60 and since the stopper 13d is provided in the vicinity of this carriage stop position, the lever 80 soon abuts against the stopper 13d, thereby stopping the movement of the carriage 60, in the event that the carriage 60 begins to move in a state in which the operation for mounting the ink cartridge 90 by means of the lever 80 has not been effected completely.

[0062]

Accordingly, it is possible for the ink jet printer to operate very quickly for preventing the incompletely mounted ink cartridge 90 from coming off the carriage 60.

[0063]

(iii) Since the carriage stop position serves as the capping position in which the cap 100 is fitted to the head H, in the event that ink should be ejected from the head H as the result of a pressure rise caused in the ink flow channel at

the time when the ink cartridge 90 is mounted on the carriage 60, and the ink is recovered by the cap 100, so that the interior of the printer is prevented from becoming stained.

[0064]

(iv) Since the stopper 13d is formed in a structure integrated with the case 13 of the printer, it is possible to produce the stopper 13d in a simple structure.

[0065]

(v) Since the ink cartridge 90 is supported resiliently by the carriage 60 via the tongues 85 of the lever in the direction of movement of the carriage 60, the inertial force of the ink cartridge 90 at the time of the reversing motion of the carriage 60 is transmitted to the carriage 60 via the tongues 85. For this reason, the inertial force of the ink cartridge 90 is transmitted to the carriage 60 in a dampened state, with the result that the vibrations and the reversing noise are reduced.

[0066]

The present invention has been described above with respect to one example of preferred embodiment thereof, and yet it should be noted in this regard that the present invention is not to be restricted in any way by the example of its preferred embodiment described above and that the present invention can be embodied with modifications to be made as appropriate within the scope of the purports of the present invention.

[0067]

[Advantageous Effects of This Invention]

As described above, the present invention produces the advantageous effect that the ink jet printer according to the present invention is constructed in such a manner that the mounting and demounting of the ink cartridge is performed by an operation of a lever in such a manner that it is capable of preventing the ink cartridge from coming off from its position.

[0056]

Further, the ink jet printer according to the present invention is capable also of achieving a reduction of vibrations in its operation and a reduction of the noises caused by the action for reversing the movement of the ink jet recording head on the carriage.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1]

Fig. 1 is a cross-sectional view illustrating the left-hand side of an ink jet printer in an example of preferred embodiment of the present invention;

[Fig. 2]

Fig. 2 is a plane view illustrating the ink jet printer in the same example of preferred embodiment of the present invention;

[Fig. 3]

Fig. 3 is a plane view illustrating the carriage in the

state with no ink cartridge mounted thereon in the same ink jet printer according to the present invention;

[Fig. 4]

Fig. 4 is a cross-sectional view illustrating the carriage as taken along the line IV - IV shown in Fig. 3;

[Fig. 5]

Fig. 5 is a cross-sectional view illustrating the carriage in the state with the ink cartridge mounted thereon;

[Fig. 6]

Fig. 6 is a perspective view illustrating the lever in the ink jet printer according to the present invention;

[Fig. 7]

Fig. 7 is a cross-sectional view of the lever as taken along the line VII - VII shown in Fig. 6;

[Fig. 8]

Figs. 8 is a chart illustrating the operation of the lever in the ink jet printer according to the present invention;

[Fig. 9]

Fig. 9 is a partially cut-away front view illustrating the carriage stop position in the same ink jet printer according to the present invention;

[Fig. 10]

Fig. 10 is a partial cross-sectional view illustrating the stopper in the right-side of the same ink jet printer according to the present invention;

[Fig. 11]

Fig. 11 is a chart illustrating the operation of the stopper in the same ink jet printer according to the present invention;

[Legends to Reference Marks]

A. Printing area

13. Upper case

13d. Stopper

60. Carriage

70. Ink jet recording head

80. Lever

85. Tongue (resilient member)

90. Ink cartridge

100. Cap

FIG. 2

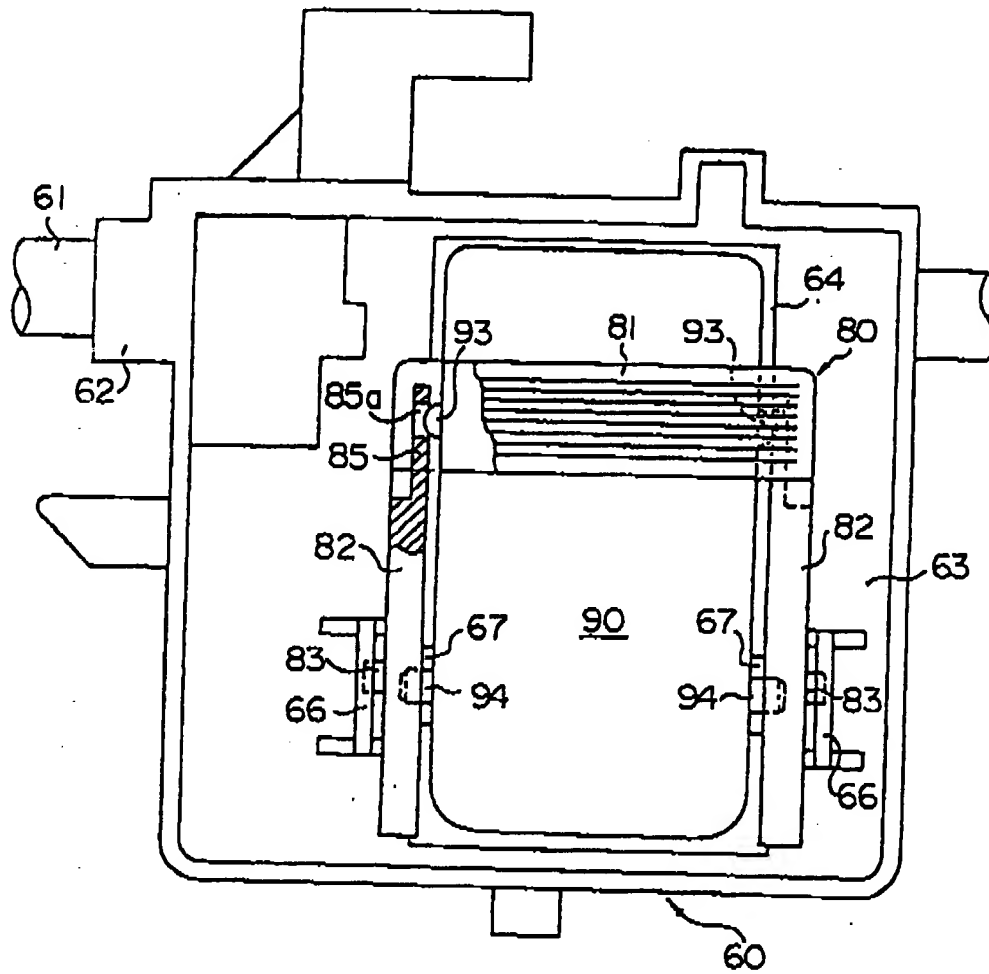


FIG. 3

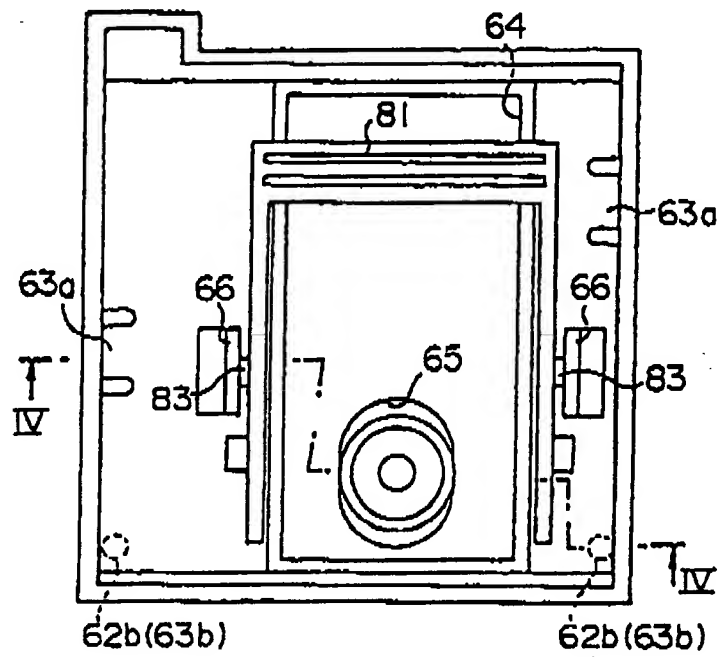


FIG. 4

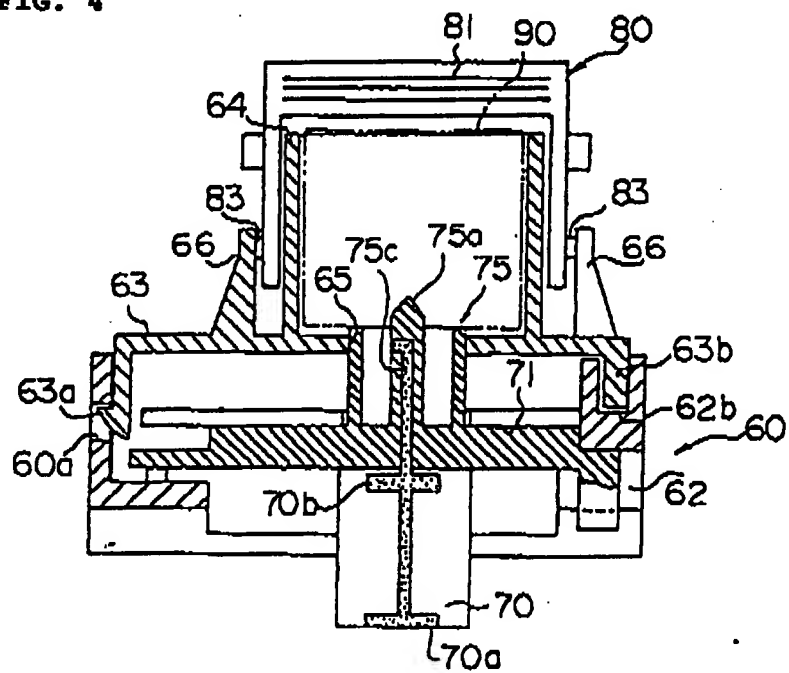


FIG. 5

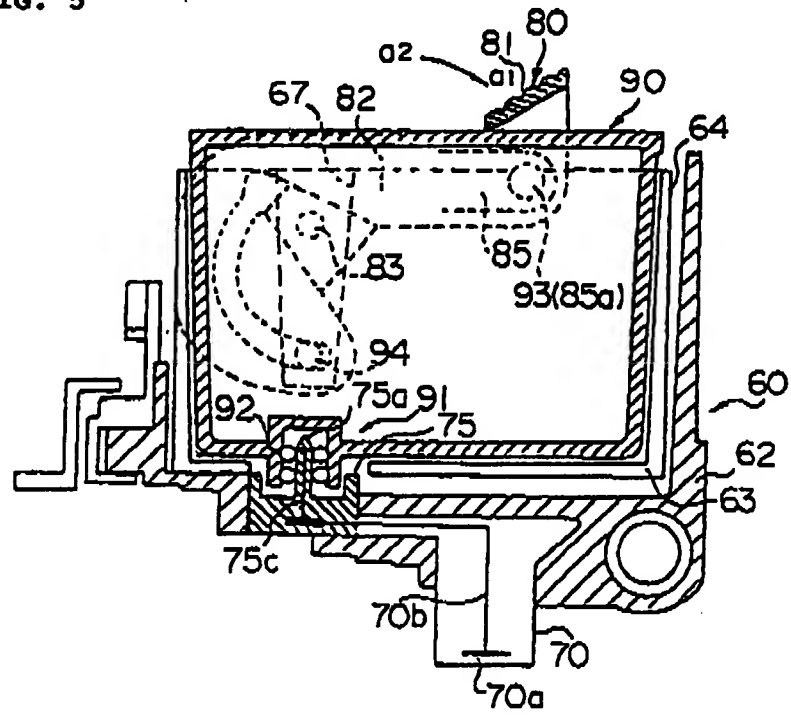


FIG. 6

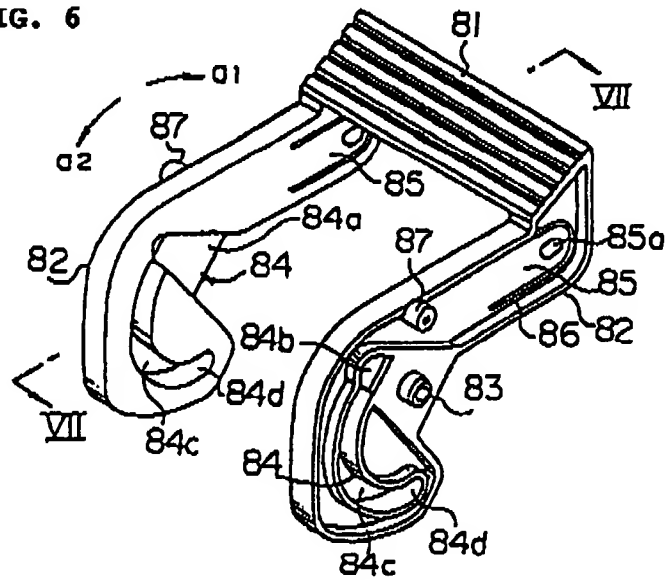


FIG. 7

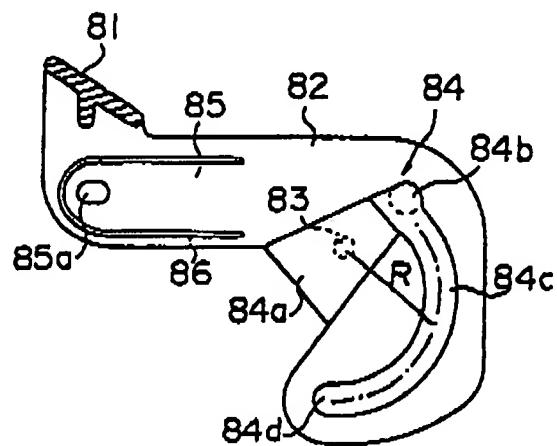


FIG. 8

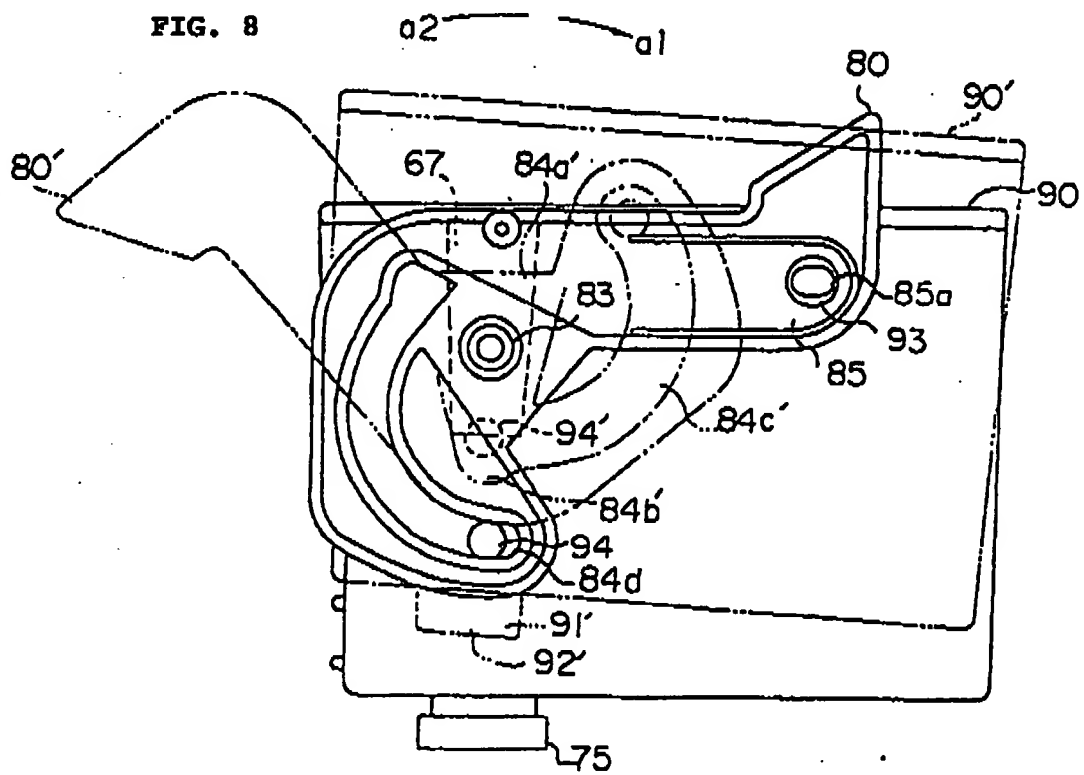


FIG. 9

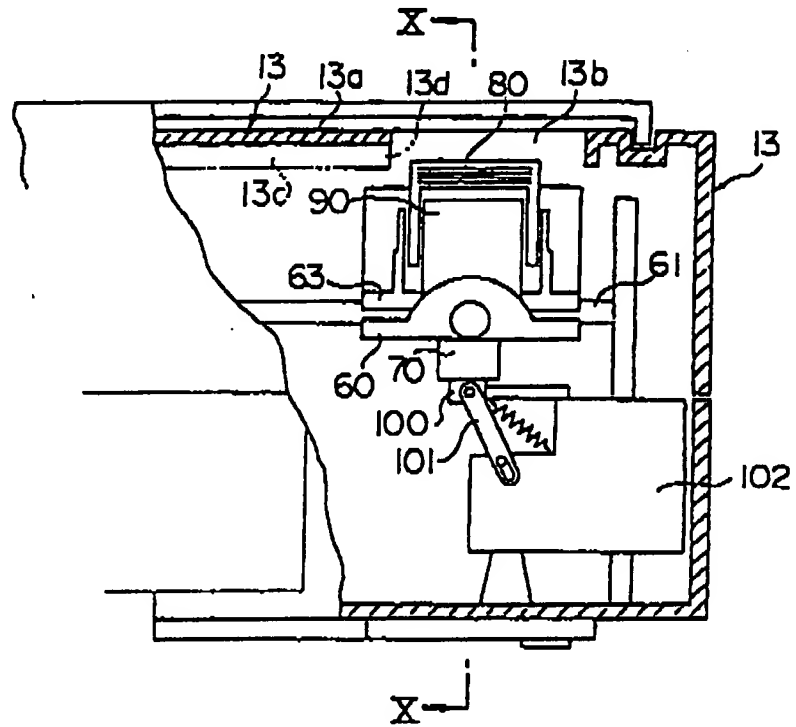


FIG. 10

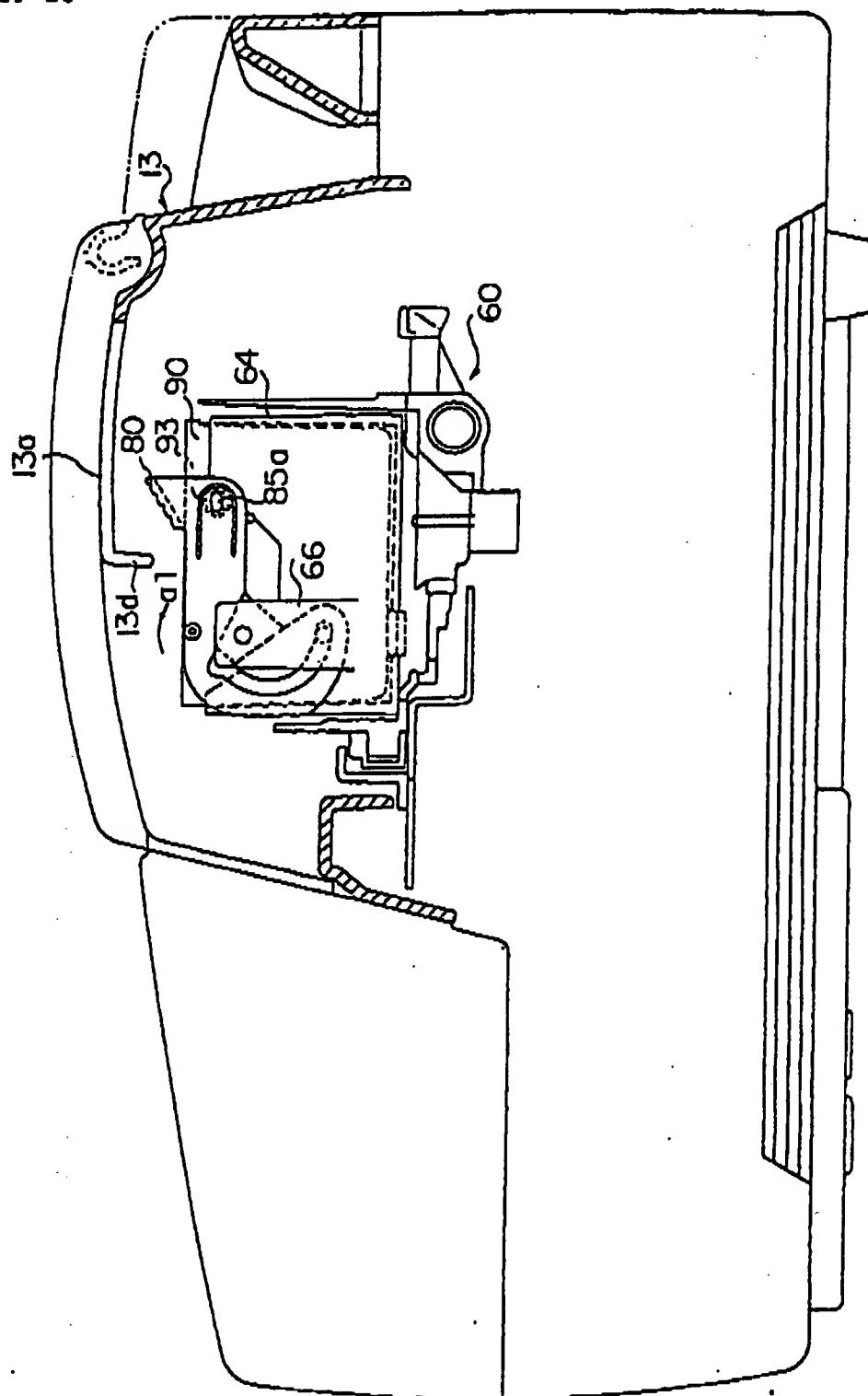
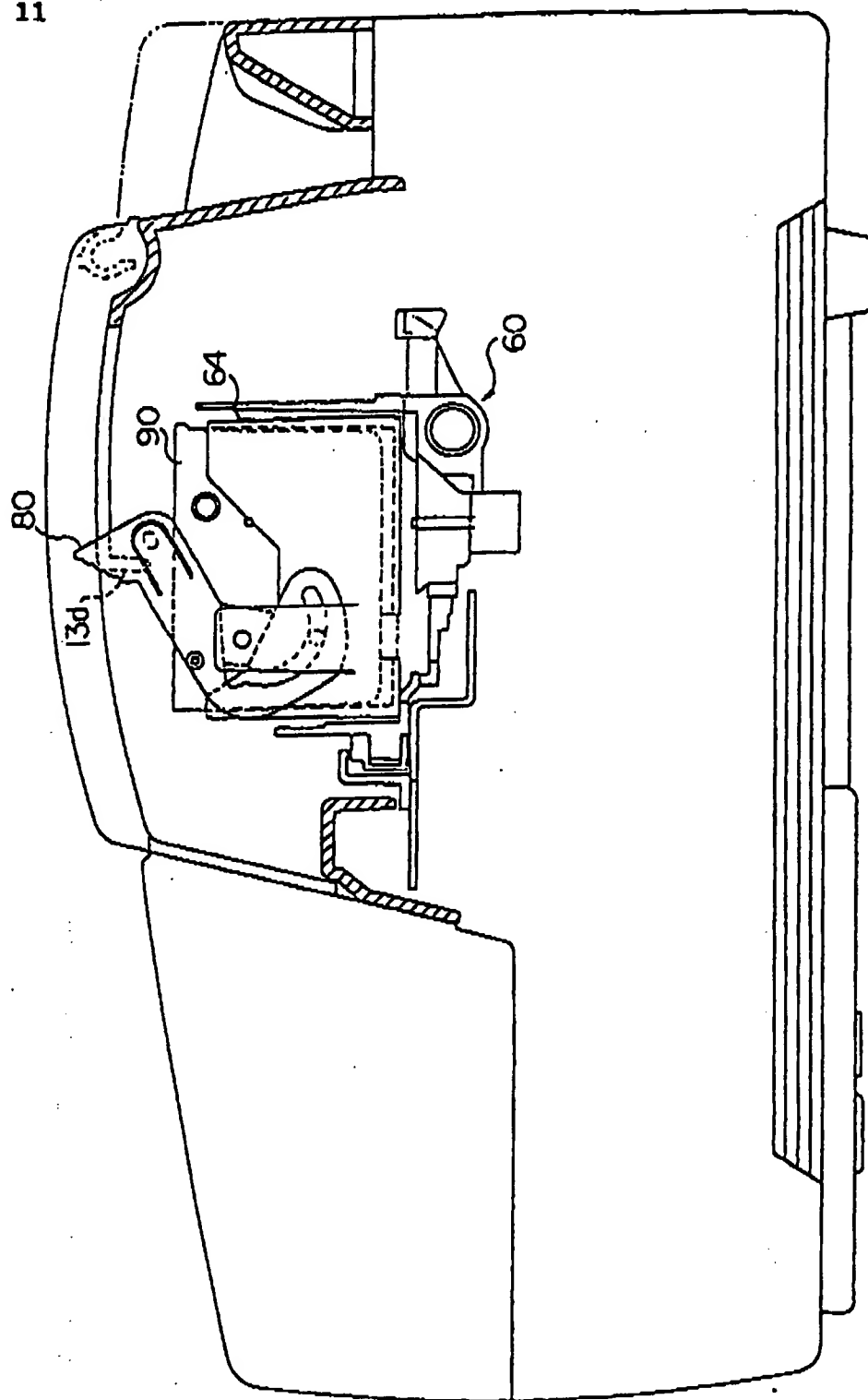


FIG. 11



[Document name] **ABSTRACT OF THE DISCLOSURE**

[Summary]

[Object]

It is an object of the present invention to offer a structure of an ink jet printer which is capable of preventing the ink cartridge 90 from coming off from its position and achieving a reduction of the noises caused by a reversing action of the ink jet recording head on the carriage.

[Construction]

The ink jet printer according to the present invention is provided with a stopper 13d formed in a structure integrated with a case 13, the stopper 13d stopping a carriage 60 from its movement by getting into its direct contact with a lever 80 when the lever 80 has failed to complete the mounting operation for the ink cartridge 90. The ink jet printer according to the present invention features a construction in which the carriage stop position for the mounting operation of the cartridge 90 coincides with the capping position for the cartridge 90 and in which the ink cartridge 90 is held resiliently by the lever 80 in the direction of movement of the carriage 60.

[Selected drawing]

Fig. 9